

Figure 1

Reaction scheme for the synthesis of ceramic composition 112:

Step 1: Reaction of silanol 100 (n+1 equivalents) and silane 102 (n equivalents) to form intermediate 104, with the loss of 2n H₂.

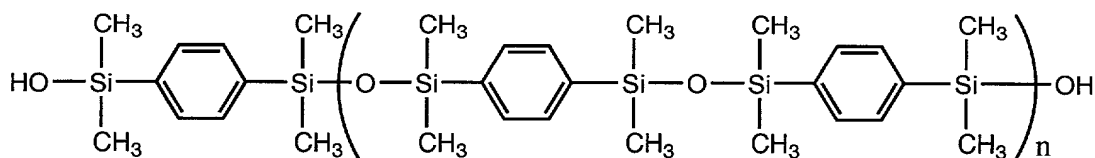
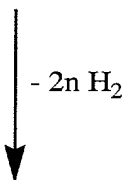
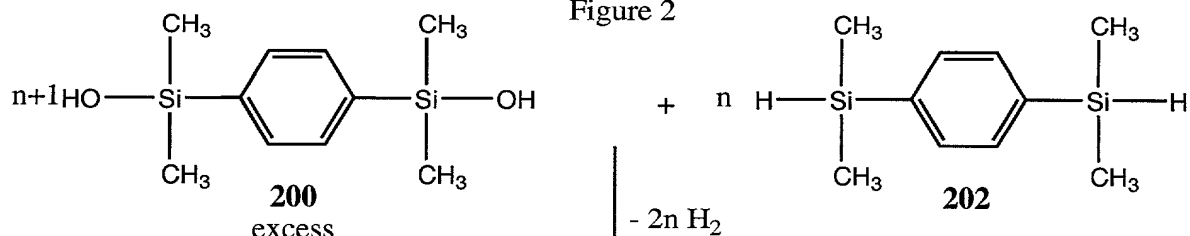
Step 2: Reaction of intermediate 104 with diamine 106 (m equivalents) to form intermediate 108, with the loss of m NH(CH₃)₂.

Step 3: Reaction of intermediate 108 with a crosslinking agent (represented by a Y group and a double bond Z) to form intermediate 110.

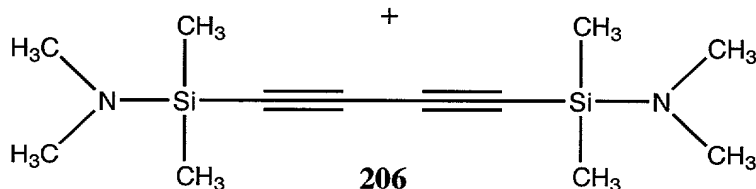
Step 4: Pyrolysis of intermediate 110 to yield the final ceramic composition 112.

ceramic composition 112

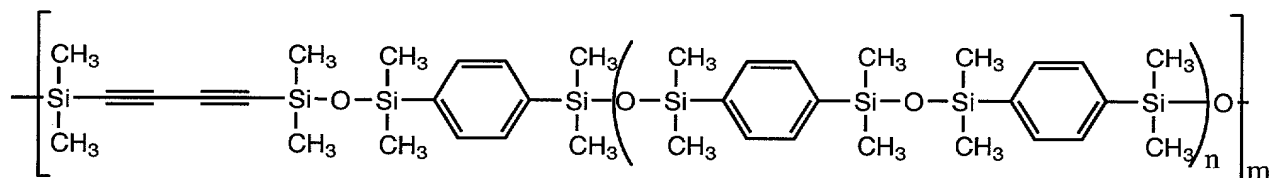
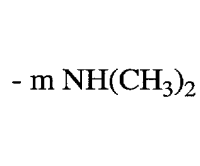
Figure 2



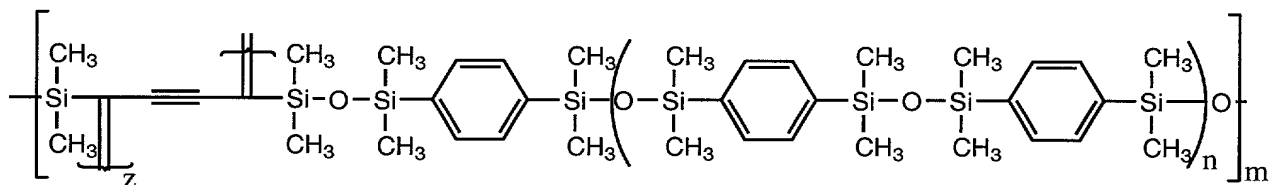
204



206



208



210

pyrolysis

ceramic composition 212

Figure 3

